

AUTHOR: BARANOV, S.A., POLEVOY, R.M., RODIONOV, Yu.F. 89-9-13/32
 TITLE: SHISHKIN, G.V.
 Nuclear Energy Levels of Tu^{169} . (Energeticheskiye urovni yadra Tu^{169})
 PERIODICAL: Atomnaya Energiya, 1957, Vol 3, Nr 9, pp 256-257 (U.S.S.R.)

ABSTRACT: By means of a double-focussing β -spectrometer, a scintillation spectrometer, and a proportional aiming tube the γ -radiation of the nucleus Tu^{169} was measured and a random scheme was set up. The following γ -energy with the corresponding multipole order was found:

8,42 (M1 + E2)	130,48 (E2)
20,74 (M1)	156 ?
63,13 (E1)	177,21 (0,75 M1 + 0,25 E2)
93,62 (0,9 M1 + 0,1 E2)	197,97 (M1)
109,67 (M1)	240,6 (E1 ?)
118,20 (E2)	260,8 (E1 ?)
	307,7 (E2)

The above can be arranged in form of a scheme with the following level values (spin and parity in brackets):

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Nuclear Energy Levels of Tu^{169} .

89-9-13/32

0	(1/2)
8 42	(3/2 +)
118,20	(5/2 ±)
138,90	(7/2 ±)
316,06	(7/2 ±)
379,49	(7/2 +)
472,8	(9/2 -)

(With 2 Slavic References).

ASSOCIATION: Not given
PRESENTED BY:
SUBMITTED: 15.4.1957
AVAILABLE: Library of Congress
Card 2/2

BARANOV, S. A.

AUTHORS:

Baranov, S.A., Zelenkov, A.G., Rodionov, Yu.F. 48-7-3/21

TITLE:

Ionization Chambers with Grids (Ionizatsionnaya kamera s setkoy)

PERIODICAL:

Izvestiya Akad. Nauk SSSR, Ser. Fiz., 1957, Vol. 21, Nr 7, pp. 913 - 917 (USSR)

ABSTRACT:

In recent years a number of spectrometric devices of great light intensity were developed which are based on the ionizing action of radiations. The so-called ionization chambers with grids were widely spread. The action of the grid consists in the removal of the influence of the positive ions so that the electron impulse amplitude is not dependent on the direction of the particles flying out of the target wall. Figure 1 shows the scheme of the chamber, its construction guaranteeing the possibility of a mutual exchange of the four α -radioactive sources under maintenance of the physical test conditions. The impulses run from the gathering electrode to the amplifier inlet, then to the discriminator which permits to cut part of the impulse amplitude as well as to amplify the rest to the necessary quantity. From the discriminator the impulses go to the multichannel differential amplitude analyzer. The high light intensity is to be con-

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Ionization Chambers with Grids

48-7-3/21

sidered as general advantage of these chambers, their dissolving power as characteristic quality. Further the construction and the functioning of these chambers are described and explained in detail (figure 2 to 8). The dependence of the noise intensity on the incandescent voltage of the first incandescent lamp is represented by figure 2. The selection of the optimum frequency characteristic was carried out according to the minimum of the distribution width of the impulse amplitudes of α -particles of the polonium target wall (figures 3 and 4). The curves of the dependence of the impulse amplitudes on the voltage ratio on the chamber electrodes are to be seen on figure 5. Figure 6 gives the spectra of the α -particles of U^{233} , Pu^{239} , and Am^{241} which was used as standard. Figures 7 and 8 show the spectra of the α -particles of Th^{230} and Pu^{238} . This device is very useful for a number of works and especially for the analysis of micro-quantities of α -active isotopes. There are 8 figures and 7 references, 1 of which is Slavic.

AVAILABLE:

Library of Congress

Card 2/2

AUTHOR: Baranov, S.

TITLE: The Development of Atomic Energy in India (Razvitiye atomnoy energetiki v Indii)

89-1-23/29

PERIODICAL: Atomnaya Energiya, 1958, Vol. 4, Nr 1, pp. 103-104 (USSR)

ABSTRACT: Instead of petrified fuel reserves, India has large reserves of atomic materials; India's uranium reserves are estimated at 12-14.00 t and her thorium reserves at 150-180.000 t.

1.) The following plants, where such materials are worked up exist:

A factory at Al'vayye: from 3000 t of monazite metallic thorium is obtained every year.

A factory at Trombaye: Every year 1000 t of thorium nitrate are produced.

A factory at Gkhatsile: Uranium is obtained from Copper waste. Every day 200 t of copper ores are said to be worked up.

2.) a) In August 1956 the first Indian reactor (swimming pool of 1 MW) was put into operation.

b) At present a 40 MW NRX type is being built jointly with Canada. It will work with natural uranium and with heavy water. The reactor is intended to be used as a material testing reactor, and will be put into operation in March

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The Development of Atomic Energy in India.

89-1-23/29

1958.

- 3.) By the end of 1958, construction of a zero-type reactor - "Zerline" - with heavy water will begin.
- 4.) The Indian Atomic Ministry is planning the establishment of several atomic electric stations for the next 5 years. Calculations have shown that in India atomic current is already able to compete with the conventional current.
- 5.) In the field of Nuclear research the research institute at Trombay (Trombeye) deserves special mention. By 1958 it is intended to have 800 collaborators. There are 10 non-Slavic references.

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БАНАНОВ, С. А.

PHASE I BOOK EXPLOITATION SOV/1297
Vsesoyuznaya nauchno-tekhnicheskaya konferentsiya po priimeneniyu radioaktivnykh i stabil'nykh izotopov i ikh izmeneniy v narodnom khozyaystve i nauke, Moscow, 1957

Polucheniye izotopov. Moshchnyye gamma-ustanovki. Radiometriya i dosimetriya; trudy konferentsii... (Isotope Production. High-energy Gamma-Radiation Facilities. Radiometry and Dosimetry. Transactions of the All-Union Conference. Radiometry and Dosimetry. Proceedings of the All-Union Conference. State of Economy and Science) Moscow, Izd-vo AN SSSR, 1959. 293 p. 5,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR; Glavnoye upravleniye po ispol'tovaniyu atomnoy energii SSSR.
Editorial Board: Prolov, Yu.S. (Resp. Ed.), Zhavoronkov, M.M. (Deputy Resp. Ed.), Aglintsev, G.K., Akhmedov, B.A., Bochkarev, V.V., Leuchinskiy, M.I., Malkov, T.P., Smirnov, V.I., and Popov, G.L. (Secretary); Tech. Ed.: Novichkov, N.D.

PURPOSE: This collection is published for scientists, technologists, persons engaged in medicine, medical research, and others concerned with the production and/or use of radioactive and stable isotopes and radiation.

COVERAGE: Thirty-eight reports are included in this collection under three main subject divisions: 1) production of isotopes; 2) high-energy gamma-radiation facilities; and 3) radiometry and dosimetry.

TABLE OF CONTENTS:

PART I. PRODUCTION OF ISOTOPES

Prolov, Yu.S., V.V. Bochkarev, and Ye.Ye. Kulish. Development of Isotope Production in the Soviet Union. This report is a general survey of production methods, apparatus, raw materials, applications, investigations, and future prospects for radio isotopes in the Soviet Union.
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Lantratov, M.P., V.Ye. Muroylov, and O.A. Myazdrikov. A Photocolorimetric Method of Beta-dosimetry. 246
Barnov, S.A., and R.M. Polevoy. A Counter for [Determining] The Absolute [Activity] of Charged Particles 251
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Kulagin, K.S., and V.V. Markelov. On the Problem of Measuring Weak Currents 264

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AUTHORS: ~~Baranov, S. A.~~, Holionov, Yu. P., Shishkin, G. V.,
 Gribitsky, L. V. 100V/50-34-1-1, 51

TITLE: The Energy Levels of the Tb^{161} Nucleus (Energeticheskiye
 urovni yadra Tb^{161})

PERIODIC: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958,
 Vol 34, No 6, pp 1367-1380 (USSR)

ABSTRACT: First, the authors mention the previous papers concerning
 this subject. The purpose of this paper is a more accurate
 investigation of the electron spectrum (including its low
 energy part) and of the soft γ -radiation caused by the de-
 cay of Tb^{161} . The electron spectrum of Tb^{161} was investigated
 by means of a magnetic β -spectrometer with double focusing
 of the electron beam (Ref 11). The γ -radiation caused by the
 decay of Tb^{161} was investigated by means of spectrometric
 proportional counters. The experimental device and the pre-
 paration of the radioactive source (Tb^{161}) is described in
 a few lines. A diagram shows a great part of the β -spectrum
 and the electron spectrum for the interval of the values of

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The Energy Levels of the Dy¹⁶¹ Nucleus

SOV/56-34-6-2/51

H α from 200 to 900 G.cm (obtained by means of the thin source) and from 780 to 980 G.cm (obtained by means of a more intense source). The authors observed some dozens of electron lines which are placed mainly in the low energy part of the spectrum but they observed no (although if weak) high energy conversion lines. A table gives an interpretation of the conversion lines corresponding to the γ -transitions of the Dy¹⁶¹ nucleus and also the intensities for some lines. In the Curie (Myuri) diagram one may discern 4 partial spectra the energy limits of which are given. The following part of this paper deals with the measurement by means of a spectrometric proportional counter and of a γ -spectrometer. A diagram shows the spectrum of the X-radiation and of the soft radiation of Dy¹⁶¹ plotted in the coordinates $(N, E_{X,\gamma})$ where N denotes the number of the pulses and $E_{X,\gamma}$ - the energy of the X- and γ -radiation (in keV) for 3 different measurement series. The next part of this paper deals with the determination of the multipole type of the γ -transitions. A table gives the experimental values of the absolute conversion coefficients for the γ -radiations with the energies 25,75; 48,2; 74,4 keV. The

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The Energy Levels of the Dy¹⁶¹ Nucleus

DDV/51-34-6-2/51

COMPLETED: March 13, 1958

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21(10), 21(8)

AUTHORS:

Baranov, S. A., Zelenkov, A. G., Shchepkin, G. Ya.,
Beruchko, V. V., Malov, A. F.

SOV/89-7-3-14/29

TITLE:

A Large α -Spectrometer

PERIODICAL:

Atomnaya energiya, 1959 Vol 7, Nr 3, pp 262-264 (USSR)

ABSTRACT:

This article is based on a lecture delivered at the 9. All-Union Congress of Nuclear Spectroscopy (Khar'kov, January 1959). The spectrometer developed belongs to the $\pi\sqrt{2}$ -type, in which, for the purpose of improving light intensity accompanied by a high degree of resolving power, the radius of the central orbit was considerably enlarged (155 cm). The magnet has the shape of a mushroom and is composed of 3 parts: the core, a cylindrical part, and 2 "hats" (photo-graph attached). The width of the poles is ~ 70 cm, the distance between them is 35 cm, and the total weight is 90 t. Profiled end pieces are fastened to the pole shoes, their form is calculated by means of an analytical method. The operation chamber has a content of ~ 1000 l. Evacuation is brought about by means of a VH-2 forepump. As a high-vacuum pump a VH-54-type unit is used. The operating vacuum amounts to some 10^{-6} torr. It is possible to measure 4 α -active pre-

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A Large α -Spectrometer

SOV/69-7 3-14/10

parations successively without the vacuum being influenced. The maximum size of the source is 100×10 mm. Recording of the α -particles is carried out either by means of a proportional counter or by means of thick-layered photo plates. The magnetic field coils are fed by a selenium rectifier which is, in turn, connected with a 35 kva motor generator by way of a DN-35 choke. Within the operational range of the device a current of 700-1300 a flows, which corresponds to a field strength of 2.0-3.5 kOe. Stabilization of the magnetic field is described more closely by reference 6. During the measurement the maximum deviation of the magnetic field from the previously adjusted value is less than $2 \cdot 10^{-4}$ in the course of 8 hours of perpetual operation. The topography of field distribution was experimentally investigated with great exactitude. Boundary effects were eliminated in accordance with reference 7. On the basis of the topography it was possible to determine the shape of the diaphragms by which the α -beam is bounded. The maximum utilized solid angle of the device is $8 \cdot 10^{-4}$ of 4π . The half width of the lines amounts to some hundredth parts of a percent. The dispersion of the device for the α -particles of Po^{210} was measured: 1.2 kev/mm. The α -sources may have a weight of up to 100 μg . Long-lived α -radiation sources with a half life of up to $2 \cdot 10^{10}$ a still

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A Large α -Spectrometer

SOV/99-7-3-14/29

give useful measuring results. There are 2 figures and
7 references, 2 of which are Soviet.

SUBMITTED: May 8, 1959

Card 3/3

S/048/59/023/012/001/009
B006/B060

21.5300

AUTHORS: Baranov, S. A., Zelenkov, A. G., Shchepkin, G. Ya.,
Beruchko, V. V., Malov, A. F.

TITLE: A Large α -Spectrometer With Double Focusing

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959,
Vol. 23, No. 12, pp. 1402 - 1410

TEXT: The present paper offers a description of an efficient α spectro-
graph ($\pi\sqrt{2}$ - focusing), devised by the authors for the microscopic
investigation of the α -decay. The magnetic field distribution in the gap
may be approximated by the series $H/H_0 = 1 + a_1\eta + a_2\eta^2 + a_3\eta^3 + \dots$ where
 H_0 denotes the field in the central orbit with the curvature radius ρ_0 ; VC

$\eta = \frac{r - \rho_0}{\rho_0}$. The coefficients of the expansion were chosen to be $a_1 = -1/2$,
 $a_2 = 1/8$, $a_3 = 3/16$. ρ_0 was chosen to be 155 cm to allow for the highest
possible resolving power of the device and maximum light intensity. The
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A Large α -Spectrometer With Double Focusing S/048/59/023/012/001/009
B006/B060

device, weighing 90 t, consists mainly of the magnet with the excitation winding and of the vacuum chamber placed into the gap between the poles. The width between the poles is ~ 70 cm, the gap width between them is 35 cm. Fig. 1 shows a picture of the complete equipment. Fig. 2 shows a cross-section through the magnet. Pressure reduction down to the magnitude of 10^{-6} torr was rendered possible by the connection of the chamber (~ 1000 l) to a forepump of type VN-2 and to a vacuum unit VA 5 4. Fig. 3 shows a cross-section through the complete spectrometer. The sources (maximum dimensions: 100 \times 10 mm) were placed in a special device. Three similar diaphragms served for the limitation of the α -beam. The diaphragms are placed in the central part of the chamber (under angles of 100, 130, and 160°), where the beam has the maximum cross-section. The measuring of the α -beam is carried out by means of a proportional counter or by thick-layered photographic plates. Simultaneously a set of plates with a total area of 480 \times 90 mm may be exposed. Fig. 4 shows the supply of the magnet schematically. The water-cooled magnet winding consists of a copper bar (70 \times 10 mm cross section) and has 53 turns. The working current intensity is 700-1300 a, corresponding to a field potential of 2.0 - 3.5 koe. More

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A Large α -Spectrometer With Double Focusing S/048/59/023/012/001/009
B006/B060

details are given in the connection. Fig. 5 shows a scheme of the system, briefly discussed, for the stabilization of the magnetic field. The H-measurement is carried out by means of the paramagnetic proton resonance. A 0.5% aqueous solution of manganese chloride was used for transmission. The solution filled in a vacuum pocket was directly placed in the magnet gap. The block diagram of the field meter is discussed and shown in Fig. 6. The error of this meter amounts to $1 \cdot 10^{-5}$. The investigation of the magnetic field topography is discussed next. For this purpose two devices were developed, one basing on the signal measurement by means of a ballistic galvanometer, the other basing on a signal compensation. Both devices were very sensitive (~ 0.05 oe/mm). Results may be seen in Fig. 8 and in a table. More accurate data will be supplied in another paper. Finally the ion-optical properties of this device are discussed. Fig. 9 shows the shape of the focal surface. The energy range $\Delta E/E_0$ of the α -particles was $\sim 10\%$ and was simultaneously recorded by photographic plates. The half-width of the lines within the whole range, was ~ 0.07 . The dispersion dE/dx was $\sim 2.28 \cdot 10^{-4} E_0/\text{mm}$. This comes up to $\sim 1.2 \text{ kev mm}^{-1}$ for Po^{210} α -particles. The resolving power of the device is illustrated by the Card 3/4

VC

, A Large α -Spectrometer With Double Focusing S/048/59/023/012/001/009
B006/B060

α -spectrum of Cm^{242} , shown in Fig. 10. Finally the authors thank the following persons for interest and assistance: I. V. Kurchatov, L. A. Artsimovich, V. Z. Bychkov, A. M. Barinov, I. V. Naumov, S. M. Rubchinskiy, M. P. Zel'dovich, V. V. Zhukov, N. N. Semashko, D. V. Pavlov, A. A. Nikulichev, V. M. Kulakov, A. A. Arutyunov, S. N. Belen'kiy, A. I. Timoshinov, A. D. Runov, I. Ya. Leskov, and M. I. Dmitruk. There are 10 figures, 1 table, and 13 references. 6 Soviet.

✓c

Card 4/4

BARANOV, S.A.; POLEVOY, R.M.; RODIONOV, Yu.F.; SHISHKIN, G.V.;
SHUBKO, V.M.

[Radioactive decay of Th^{231}] Izuchenie radioaktivnogo ras-
pada Th^{231} . Moskva, In-t atomnoi energii AN SSSR, 1960. 22 p.
(MIRA 17:1)

S/048/60/024/07/02/010
B006/B014

AUTHORS: Baranov, S. A., Polevoy, R. M., Rodionov, Yu. F., Shishkin,
G. V., Shubko, V. M.

TITLE: Investigation of the Radioactive Decay of Th²³¹

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960,
Vol. 24, No. 3, pp. 261-271

TEXT: The article under review was read at the Ninth All-Union Conference on Nuclear Spectroscopy (Khar'kov, January 26 - February 2, 1959). Th²³¹ is a well-known β -emitter with a half-life of 25.6 hours; numerous investigations of the level scheme have already been conducted. The authors were stimulated to further investigations by the fact that a level scheme deviating from Ref. 5 had been published in Ref. 4. The sample was obtained by bombarding Th²³⁰ with slow neutrons in the RFT reactor. The subsequent chemical treatment of the sample is described in the introduction. Numerous details concerning measurements of the electron spectrum are reproduced in the 2nd section. Fig. 1 shows the most

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Investigation of the Radioactive Decay of
Th²³¹

S/048/60/024/02/02/010
B006/B014

interesting part of the electron spectrum in the region of from 150 to 1,100 gauss.cm. γ -Spectrometric measurements are described in the 3rd section. Fig. 2 shows the spectrum of X-ray and soft γ -radiation of Pa²³¹ taken by means of proportional counters that were filled with heavy gases. Measurements showed among other things that the most intense γ -rays with 25.6 and 84.1 kev do not occur in a cascade, that the 26-kev quanta coincide with the 58-, 95-, 145-, 163-, and 218-kev quanta, but not the 250-kev quanta with the more intense 26- and 84-kev quanta. The 4th section deals with the determination of the multipolarities of certain γ -transitions, and the 5th section with details of the Pa²³¹ level scheme. The bulky numerical material yielded by the investigations is clearly compiled in tables. Table 1, which extends over 3.5 pages, offers an interpretation of the electron lines occurring in the

Th²³¹ β -, Pa²³¹ decay, Table 2 supplies data of the energy of γ -transitions of the Pa²³¹ nucleus, and Table 3 provides the absolute and relative conversion coefficients for the γ -rays of Pa²³¹. Fig. 3 shows the level scheme as it proceeds from results of measurements. This scheme agrees with that obtained by Nilsson from at least the qualitative side, ✓

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Investigation of the Radioactive Decay of
Th²³¹

S/048/60/024/03/02/010
B006/B014

but is not in agreement with those published in Refs. 4 and 5. The authors finally thank P. E. Nemirovskiy for discussing results. There are 3 figures, 3 tables, and 16 references, 3 of which are Soviet.

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Card 3/3

83669

S/048/60/024/009/002/015
B013/B063

24.6720

AUTHORS: Baranov, S. A., Zelenkov, A. G., Kulakov, V. M.

TITLE: Investigation of the Fine Structure of the Alpha Radiation ¹⁹
of U^{234} and U^{235} ¹⁹

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960,
Vol. 24, No. 9, pp. 1035 - 1040

TEXT: The authors studied the fine structure of the alpha spectra of U^{234} and U^{235} by means of a large magnetic spectrograph with double focusing (Refs. 1 and 2) in the energy range $4150 \div 4800$ kev. A uranium target enriched in U^{235} , which was produced by vacuum evaporation, served as the source. The target had a thickness of $\sim 10 \mu\text{g}/\text{cm}^2$. The spectrograph was calibrated with a group of U^{234} alphas. This group corresponds to the transition of Th^{230} to the ground state. Three well-known groups corresponding to the transitions to the rotational levels of

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Investigation of the Fine Structure of
the Alpha Radiation of U^{234} and U^{235}

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B013/B063

Th^{230} (0^+ , 2^+ , and 4^+) were found in the α -ray spectrum of U^{234} (Fig. 1 and Table 1). The latter transition (4^+) was observed for the first time by means of a spectrograph. The values obtained for the energies and the relative intensities of the above-mentioned groups are in good agreement with the results of Refs. 3 - 6. The results of the investigation of the fine structure of the α -decay of U^{235} are given in Figs. 1 - 3 and Table 2. 13 groups of alphas were found altogether. The results published in the present paper do not contradict those obtained by means of an ionization chamber (Refs. 7 and 8), but differ considerably from the results of Refs. 9 - 11. This is especially true of groups of high intensity (Fig. 2). The analysis of the data obtained indicates that the fine-structure groups of the α -spectrum of U^{235} correspond to the transitions to the levels of four or five single-particle states of Th^{231} . An energy-level scheme of the Th^{231} nucleus is suggested (Fig. 3). However, this scheme cannot make a claim to finality. The determination of a reliable scheme would require


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Investigation of the Fine Structure of
the Alpha Radiation of U^{234} and U^{235}

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further experimental data, especially on the spectrum of conversion electrons. The authors thank V. V. Beruchko and A. I. Timoshinov for their assistance in the measurements, and V. F. Gorbunov, V. P. Zakharova, and V. K. Selikhov for their help in the preparation of sources. There are 3 figures, 2 tables, and 21 references: 7 Soviet.



Card 3/3

BARANOV, S.A.; KULAKOV, V.M.; SAMOYLOV, P.S.; TELENKOV, A.G.;
RODIONOV, Yu.F.; PIROZHKOV, S.V.

Fine structure of α -radiation from Pa^{231} and energy level scheme
of the Ac^{227} nucleus. Zhur. eksp. i teor. fiz. 41 no.5:1475-1483
N '61. (MIRA 14:12)

(Protactinium--Decay)
(Actinium) (Quantum theory)

24769
S/056/61/041/006/005/004
B-08/B-39

24.6400

AUTHORS: Baranov, S. A., Kulakov, V. M., Samoylov, P. S.
Zelenkov, A. G., Rodionov, Yu. F.

TITLE: The radioactive decay of Np^{237}

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 4
no. 6(12), 1961, 1733-1739

TEXT: The authors studied the radioactive decay of Np^{237} by means of magnetic double-focusing α - and β spectrometers, spectrometric proportional counters, scintillation spectrometers, and other device described in previous papers (e.g. P. S. Samoylov PTE, 6, 33, 959). The α spectrum from Np^{237} is highly complex, consisting of 20 monoenergetic lines (Table 1). The resolution of the β -spectrum was rather poor owing to the low activity and thickness of the source. Data on new γ -transitions for Pa^{233} as determined from the electron and gamma spectra are given in Table 2. An energy level scheme for Pa^{233} is constructed on the basis of

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The radioactive decay of Np^{237}

3176y

S/056/67/047/006/008/051

B-08/B-38

the data obtained (Fig. 2) which is not, however, regarded as complete. The authors thank S. N. Belen'kov, K. I. Merkulova, A. A. Arutyunov, Yu. I. Dmitriyev, and the student at MIFI, Yu. I. Filenko for help as well as G. I. Khlebnikov for the radiochemical purification of Np^{237} .

There are 2 figures, 2 tables, and 24 references to Soviet and non-Soviet publications read as follows: D. Strominger, J. M. Hollander, UCRL-5289, Berkeley, California, 1958; P. Stephens et al. Phys. Rev. 132, 22, 1958; J. Hubbs, J. Winitz, Bull. Am. Phys. Soc. 3, 49, 1958; J. Winitz et al. UCRL-9438, Berkeley, California, 1960.

SUBMITTED: June 21, 1961

Legend to Table 1: (1) forbiddenness factor, (2) level energy, keV
* $\text{Sum } J_1 + J_2 + J_3 + J_4 + J_5 + J_6 + J_7 + J_8$ Sum of three lowest J_1, J_2, J_3

Legend to Table 2: (1) transition energies (keV), (2) proportional constants, (3) multipolarity
(1) β -spectrometer, (2) proportional counter, (3) γ -ray spectrometer

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24.6300

31770
S/056/61/041/006/009/054
B108/B138

AUTHORS:

Baranov, S. A., Samoylov, P. S., Rodionov, Yu. F.,
Belen'kiy, S. N., Pirozhkov, S. V.

TITLE:

The energy levels of the U^{232} nucleus

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41,
no. 6(12), 1961, 1740-1747

TEXT:

To clearing contradictions in data on the U^{232} levels the authors studied the decay of Pa^{232} , which was obtained by irradiating Pa^{231} with slow neutrons. The measurements were made with a magnetic double-focusing β -spectrometer and a γ -scintillation spectrometer. Four new gamma transitions with energies 147, 236, 280, and 1150 keV have been discovered. On the basis of the β -spectrum, conversion electron spectrum, and γ -spectrum, certain data on the gamma transitions in U^{232} have been obtained (Table 3). It was not possible, however, to establish a complete level scheme. EO transitions were found between the levels $0_2^+ \rightarrow 0_1^+$ and

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The energy levels of the...

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B108/B138

$2_2^+ \rightarrow 2_1^+$. The experimental results agree with theoretical predictions. Mention is made of A. S. Davydov, G. F. Filippov, V. S. Rostovskiy, and A. A. Chaban (ZhETF, 35, 440, 1958; Nucl. Phys., 20, 499, 1960). G. V. Shishkin, A. A. Arutyunov, and Yu. A. Dmitriyev are thanked for help. There are 4 figures, 3 tables, and 13 references: 7 Soviet and 6 non-Soviet. The two most recent references to English-language publications read as follows: J. Perlman. Proc. Intern. Conf. on Nucl. Structure, Kingston, Canada, 1960, p. 547; S. Björnholm et al. Bull. Am. Phys. Soc., 6, 239, 1961.

SUBMITTED: June 21, 1961

Legend to Table 3: (1) energy of the γ -transitions, kev, (2) experiment, (3) theory for, (4) theory, (5) multipolarity of the γ -transition. * theoretical values of the internal conversion coefficients on the K and L shells taken from Ref. 6 (L. A. Sliv, I. M. Band. Tablitsa koefitsienty vnutrenney konversii γ -izlucheniya, part 2, Izd. AN SSSR, and part 1, Izd. AN SSSR, 1956). ** theoretical values of the internal conversion coefficients on the M shells taken from Ref. 7 (M. E. Rose. Internal Conversion Coefficients, Amsterdam, 1958).
Card 2/3

S/056/62/043/003/010/063
B125/B102

AUTHORS: Baranov, S. A., Kulakov, V. M., Zelenkov, A. G.,
Shatinskiy, V. M.

TITLE: Investigation of α -decay of Am^{241}

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43,
no. 3(9), 1962, 795 - 799

TEXT: Alpha decay of Am^{241} was studied with a double focusing α -spectrograph. At 4200 - 5560 keV more than 18 fine structure α -ray groups of Am^{241} were ascertained, most of them for the first time. The sources were made by sputtering americium nitrate onto a thin film of aluminum oxide. Their effective areas were 0.25; 0.5 and 1.5 cm^2 with $\leq 2 \mu\text{g}/\text{cm}^2$. Most of the lines are of a complex character. In α -decay of Am^{241} all known levels of Np^{237} are excited with significant probability. What are called favorable α -transitions produce the most strongly developed level band $5/2 - [523]$. The α -transitions to Np^{237} levels with the energies 327, 369 and 372 keV

Card 1/2

Investigation of α -decay of Am^{241}

5/056/62/043/003/010/063
B125/B102

were observed for the first time. The rotational band is more or less certainly to be identified with $k = 1/2$. There are 2 figures and 1 table.

SUBMITTED: April 6, 1962

Table. Fine structure of the α -spectrum of Am^{241} .

Legend: (1) α -group; (2) energy of the α -particles in kev; (3) intensity; (4) coefficient of forbiddenness; (5) level energy in kev.

(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
α_0	5543	0.25	940	0	α_5	5212	$2.4 \cdot 10^{-4}$	170	306
α_1	5510	0.12	1300	32.5	α_6	5222	$1.3 \cdot 10^{-4}$	240	327
α_2	5584	86.0	1.3	50.5	α_{10}	5192	$6 \cdot 10^{-4}$	330	357
α_3	5488	< 0.04	-	76.5	α_{11}	5189	$9 \cdot 10^{-4}$	180	363
α_4	5442	42.7	1.7	102.5	α_{12}	5176	$3 \cdot 10^{-4}$	300	372
$\alpha_{1/2}$	5416	$\sim 10^{-2}$	-	129.2	α_{13}	5155	$7 \cdot 10^{-4}$	170	385
α_4	5387	1.33	31	158	α_{14}	5137	$3 \cdot 10^{-4}$	280	4132
α_6	5320	$1.5 \cdot 10^{-2}$	799	226	α_{15}	5113	$4 \cdot 10^{-4}$	190	437
$\alpha_{1/2}$	5291	$1 \cdot 10^{-4}$	8540	256.2	α_{16}	5099	$7 \cdot 10^{-4}$	70	462
α_7	5277	$5 \cdot 10^{-4}$	1300	270	α_{17}	5093	$3 \cdot 10^{-4}$	160	481
α_7	5272	$3 \cdot 10^{-4}$	-	275	α_{18}	5090	$2 \cdot 10^{-4}$	100	494

Card 2/2

11120

S/056/62/043/004/002/061

B102/B186

AUTHORS: Baranov, S. A., Kulakov, V. M., Belen'kiy, S. N.

TITLE: Fine structure of Pu^{239} α -radiation

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 4(16), 1962, 1135-1139

ABST: A very careful study was made of the α -decay of Pu^{239} , using a magnetic α -spectrometer, in order to complete and improve the U^{235} nuclear level scheme. When investigating the Pu^{239} spectrum attention was limited to the fine-structure α -groups within the 4600-5200 keV range having intensities $\geq 2 \cdot 10^{-6}$. The 5425.0 keV α -group of Pu^{238} was taken as a standard. More than 20 α -groups of low intensity were found, some being complex. The nuclear level scheme (Fig. 2) was constructed from the data got in five series of tests (α -particle energy, intensity, forbiddenness, level energy). Apart from initial determinations of level characteristics, most of the α -groups mentioned were here observed for the first time. A new rotational band $5/2^+$ [633] is assumed to exist. The α -transition to the U^{235} ground state could not be separated from the α'_0 -transition to the band $1/1^-$.

Fine structure of ...

S/056/62/043/004/007/061
B102/B186

isomeric state of ^{235}U ($T_{1/2} = 26 \text{ min}$, $1/2 + 1/2 [631]$). An α -transition to a level of $\sim 46 \text{ keV}$ ($1/2^-$) is found by Newton (Nucl. Phys. 3, 345, 1957) but has not been observed. The level scheme of Fig. 2 is assumed to be still incomplete, as some α -groups such as the 4900, 4873, and 4930 groups have at least two components. There are 2 figures and 1 table.

SUBMITTED: April 6, 1962

Done / A0.

BARANOV, S.A., dotsent

Characteristics of the technological process of sawing
large lumber. Trudy STI 34:7-15 '63. (MIRA 17:2)

BARANOV, S. A.

ACCESSION NR: AP4009099

S/0056/63/045/006/1811/1818

AUTHORS: Baranov, S. A.; Kulakov, V. M.; Shatinskiy, V. M.

TITLE: New data on Alpha decay of americium isotopes

SOURCE: Zhurnal eksper. i teoret. fiziki, v. 45, no. 6, 1963, 1811-1818

TOPIC TAGS: americium, americium 241, americium 243, americium alpha decay, americium 241 fine structure, americium 243 fine structure, americium alpha spectrum, neptunium level scheme, rotational band, octopole level, odd even nucleus

ABSTRACT: Continuing earlier studies of the energy levels of Np^{239} through investigations of the alpha decay of Am^{243} (ZhETF v. 43, 795, 1962), the authors effected a considerable reduction in the scattered particle background and also measured the low energy Am^{241} alpha spectrum (~4650-5150 keV) with an energy resolution improved by a factor 1.5. New α groups, some belonging to Am^{243} , were discovered by analyzing the α spectra. Possible identifications of newly dis-

Card 1/2

ACCESSION NR: AP4009099

covered Np^{239} and Np^{237} energy levels are discussed. The existence of new $3/2^-$ [521] and $3/2^+$ [651] rotational bands are suggested, and some levels are assigned to the octopole class in the schemes of these odd-even nuclei. "In conclusion we wish to thank N. I. Aleshin, A. A. Arutyunov, Yu. N. Dmitriyev, and K. I. Merkulova, who assisted with the measurements, A. P. Smirnov-Averin for furnishing the Am^{243} sample, and L. V. Chistyakov and G. I. Khlebnikov for the careful supplementary removal of the impurities from the americium samples." Orig. art. has: 2 figures and 3 tables.

ASSOCIATION: None

SUBMITTED: 13Jun63

DATE ACQ: 02Feb64

ENCL: 00

SUB CODE: PH

NO REF SOV: 003

OTHER: 007

Card 2/2

BARANOV, S. A.; GADZHIYEV, M. K.; KULAKOV, V. M.; SHATINSKIY, V. M.

"The Investigation of Pu^{241} alpha decay."

report submitted for Intl Conf on Low & Medium Energies Nuclear Physics,
Paris, 2-8 Jul 64.

Kurchatov Inst, Moscow.

L 39484-55 EWT(1) IJP(o)

ACCESSION NR: AP5004954

S/0286/65/000/002/0056/0057

AUTHORS: Baranov, S. A.; Malov, A. F.; Polevoy, R. M.; Shchepkin, G. Ya.TITLE: Magnetic charged particle spectrometer. Class 42, No. 167649SOURCE: Byulleten' izobreteniy i tevarnykh znakov, no. 2, 1965, 56-57

TOPIC TAGS: spectrometer, particle spectroscopy

ABSTRACT: This Author Certificate presents a magnetic charged particle spectrometer with double focusing of the beam in a transverse axially symmetric magnetic field. The spectrometer contains a source and a detector of charged particles located in a vacuum chamber which is placed between the magnet poles. To increase the radiant emittance and dispersion of the device, the beam focusing is accomplished in an angle greater than 360° (see Fig. 1 on the Enclosure). To eliminate the incidence at the particle detector of "background" particles in the first loop of the beam trajectory, a system of diaphragms is placed in the vacuum chamber. Orig. art. has: 1 diagram.

ASSOCIATION: Institut atomnoy energii im. I. V. Kurchatova (Atomic Energy Institute)

SUBMITTED: 25Dec63

ENCL: 01

SUB CODE: NP

NO REF. SOV: 000

OTHER: 000

Card 1/2

BARANOV, S.I.; GABZHIYEV, R.E.; KULAKOV, V.M.; SHATIREVA, V.M.

Alpha spectrum of ^{241}Pu and the level of the ^{241}Pu isotope.

Int. J. Nucl. Energy, 1987, 5, 1-5.

CHINA 18.4

ACC NR: AP7013696

SOURCE CODE: UR/0367/67/005/002/0241,0245

AUTHOR: Baranov, S. A.; Aliyev, I. G. -- Aliev, I. G.; Chistyakov, L. V.

ORG: none

TITLE: Alpha-decay of Cm^{240} and Cm^{241}

SOURCE: Yadernaya fizika, v. 5, no. 2, 1967, 241-249

TOPIC TAGS: alpha decay, alpha beam, alpha radiation, alpha spectrum, alpha particle, nuclear energy level, alpha spectroscopy

SUB CODE: 20

ABSTRACT: The α -radiation spectra of Cm^{241} , Cm^{240} , and Pu^{236} were investigated using a magnetic α -spectrograph with double focussing of the α -particle beam at the angle $\pi/2$. In the spectra of Cm^{241} , Cm^{240} , and Pu^{236} were found 12, 4, and 2 groups of α -particles respectively. The energy level schemes of Pu^{236} and U^{232} nuclei were constructed from the experimental data. The existence of rotation bands with the quantum characteristics $\frac{1}{2}^+[631]$ and $\frac{7}{2}^-[743]$ in the level scheme of Pu^{237} was proved experimentally for the first time in an investigation of the α -decay of Cm^{241} . The half lives of Cm^{241} and Cm^{240} were determined. The authors thank I. K. Shvetsov for cleaning radio activity from the foreign particles, and V. M. Kulakov, Yu. F. Rodionov, V. M. Shatinskiy, S. N. Belen'kiy, Cord 1/2

0933 2150

ACC NR: AP7013696

N. I. Aleshin, and K. I. Merkulova for help with the measurements. Orig. art.
has: 4 figures and 2 tables. [Based on authors' Eng. Abst.] [JPRS: 40,570]

Card 2/2

7

CLASSIFIED: 0000/0000/0000 101(c) 3D
AND NO: AFS029987 (A, N) SOURCE CODE: UR/0413/66/000/015/0075/0075

INVENTORS: Startsov, G. P.; Ivanova, M. K.; Baranov, S. A.

CMS: none

TITLE: Apparatus for deposition of highly reflecting multilayer deposits. Class 34, No. 184401

SOURCE: Izobret prom obraz tov zn, no. 15, 1966, 75

TOPIC TAGS: light reflection, reflectometer, reflectoscope, glass, photometer, ionization chamber

ABSTRACT: This Author Certificate presents an apparatus for the deposition of highly reflecting multilayer deposits on glass objects. The apparatus consists of a vaporizing chamber, glass vacuum cover, forevacuum and diffusion pumps, and a photometric installation. To insure a total covering of the area near that of the glass area to be covered and to determine the maximum reflectivity of the deposit in the spectral region of 1200 Å, a low-voltage hydrogen light source with an intense 1216 Å line is used in the photometric installation. An ionization chamber serves as a detector. The sensitivity of the latter extends from 1100--1300 Å

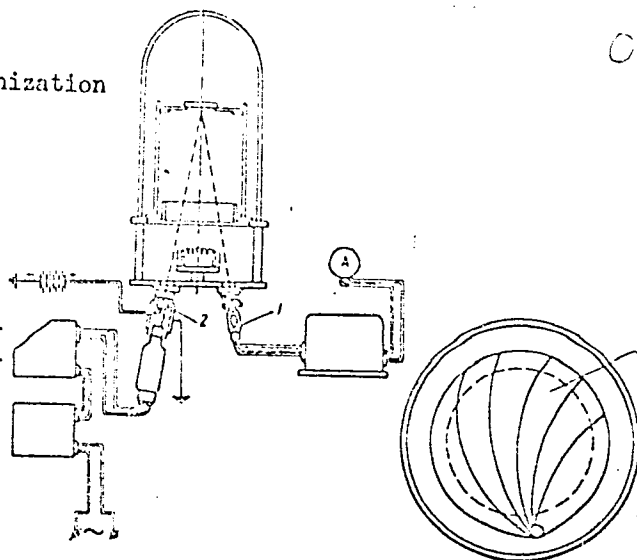
Card 1/2

UDC: 666.1.056:666.266.4.002.2.002.5

L 10305-67

ACC NR: AP6029907

Fig. 1. 1 - hydrogen lamp; 2 - ionization chamber; 3 - diaphragm



with a maximum at 1216 Å. The diaphragm is made from curvilinear plates (see Fig. 1). Orig. art. has: 1 figure.

Card 2/2 SUB CODE: 07, 2/ SUBM DATE: 17Mar64

VASIL'YEV, G.Ya.; SHVARTS, A.G.; SEROV, I.A.; MESROPOV, Yu.D.; Prinsipali
uchastie: BARANOV, S.B.; BISEROVA, A.A.; GINZBURG, L.V.;
GGROKHOV, N.D.; KARAPETYAN, D.A.; KEPERSHA, L.M.; MAMEDOVA, M.M.

Manufacture of diaphragms at the Baku tire factory. Kauch.i rez.
21 no.1:45-47 Ja '62. (MIRA 15:1)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti
i Bakinskiy shinnyy zavod.
(Baku—Tires, Rubber)

BANANOV, S.G., inzh.

Determination of efficient parameters for the system of mining
flat seams with the use of powered supports. Izv.vys.schet.
zav.:ger.msh. 7 no. 1:25-30 1964. (MIRA 17:5)

1. Leningradskiy ordena Lenina i ordena Trudovogo Krasnogo
Znameni gornyy institut imeni G.V.Plekhanova. Rekomendovana
kafedroy razrabotki plastovykh mestorozhdeniy.

ANDRUSHEVSKIY, N.A.; ~~BARANOV, S.M.~~; VANSHEYDT, V.A., professor, doktor
tekhnicheskikh nauk; VELIKSON, D.M.; GENULER, L.V.; IVANCHENKO, N.N.;
ISTOMIN, P.A.; KATS, A.M. [deceased]; KOLLEROV, L.K.; LEVIN, M.I.;
NIKITIN, M.D.; ROZHDESTVENSKIY, V.V.; GOFMAN, Ye.K., redaktor izda-
tel'stva; POL'SKAYA, R.G., tekhnicheskij redaktor

[Diesel engines; a handbook for designers] Dizeli; sverkhchnaya moshnaya
konstruktsiya. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-
ry, 1957. 442 p. (MLR- 10:10)

(Diesel engines)

BARANOV, S.M., mayor med. slushby

Penicillin therapy in the prevention of postoperative complications in appendicitis. Voen.-med. zhur. no.6:82-83 Je '58. (MIRA 12:7)
(APPENDECTOMY) (PENICILLIN)

BARANOV, S.M., podpolkovnik med.sluzhby

"Acute appendicitis." Edited by V.I. Kolesov. Reviewed by
S.M. Baranov. Voen.-med.zhur. no.2:89-91 F '60. (MIRA 13:5)
(APPENDICITIS)

BARANOV, S. M. (Lieutenant Colonel of the Medical Service) *and others*

"Experience in the Use of Potentiated Local Anesthesia Under
Conditions of a Garrison Hospital."

Voyenno-Meditsinskiv Zhurnal, No. ⁷~~12~~, December 1961, pp ~~62-7~~

BARANOV, S.M.

Potentiation in local anesthesia. Vest.khir. no.4:99-102 '61.
(MIRA 14:4)
(LOCAL ANESTHESIA)

BARANOV, S.M., podpolkovnik meditsinskoy sluzhby; ALEKSEYEV, A.P., mayor
meditsinskoy sluzhby

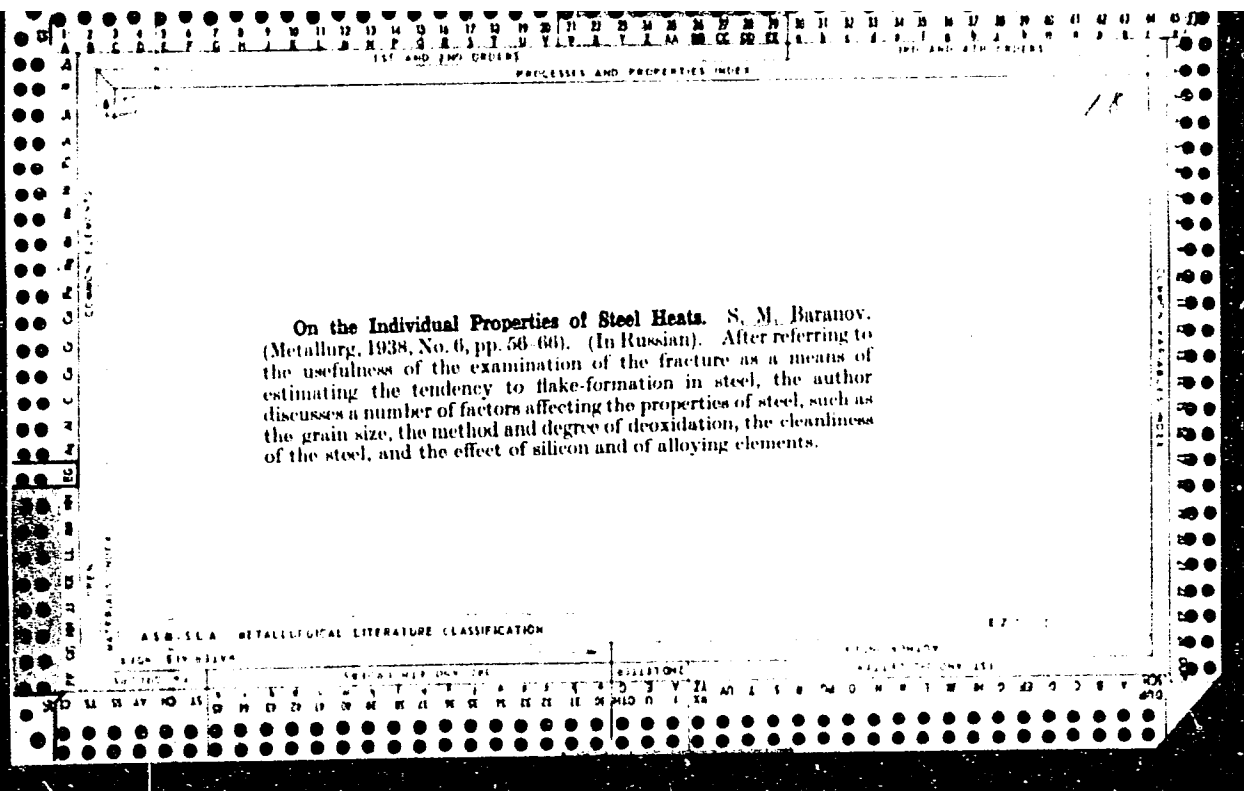
Use of potentiated local anesthesia under conditions of a garrison
hospital. Voen.-med. zhur. no.7:78 J1 '61. (MIRA 15:1)
(LOCAL ANESTHESIA) (AUTONOMIC DRUGS)

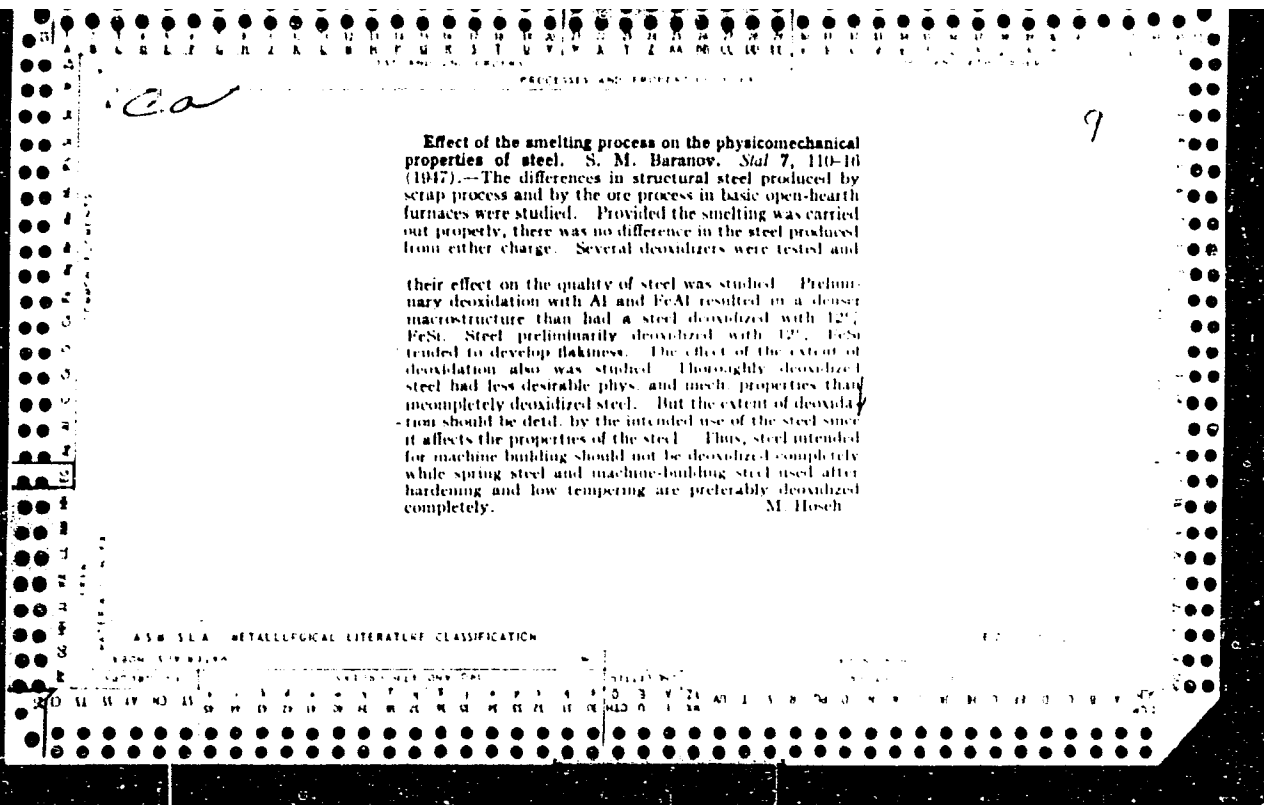
Silicon-manganese structural steels. S. M. Batanov
and I. V. Eltsin. *Khimiya i Metallurgiya*, 1935, No. 5, 5-13.
Chem. Zvesti., 1936, 1, 170. The influence of heat treat-
ment (normalizing, hardening, tempering) on the mech.
properties of Si-Mn structural steels with 0.3-0.4% C,
1.0-0.6% Si, 1.0-0.6% Mn, 0.035% S, and 0.035%
P was studied. The use of such steel as a substitute for
high alloyed structural steel in the manufacture of pieces of
small cross section is considered. (M. G. Atsina)

ASH-513-R METALLURGICAL LITERATURE CLASSIFICATION

Low-Alloy Silicon-Manganese and Silicon-Chromium Steels. S. M. Baranov. (Kachestvennaya Stal, 1937, No. 7, pp. 40-52). (In Russian). Additions of 0.50-1.3% of manganese and 1.30% of chromium were made to 0.8% silicon steel (0.16% carbon). The mechanical properties and microstructure of these steels were investigated. After rolling, the properties of these steels render them suitable substitutes for nickel-bearing structural steel.

CIA-RDP86-00513R000103510013-7"





BARANOV, S. M.

PA 64T70

USSR/Metals

Apr 1948

Steel - Impregnation
Silicates

"Effect of High-Silicon Silicates on the Properties
of Steel," S. M. Baranov, Candidate Tech Sci, 7 pp

"Stal'" No 4

Impregnation of steel with high-silicon silicates
(during deoxidation and along with other factors)
exhibits certain effects on the crystallization of
the metal and on operations during heat treatment.
Regulating the content of these silicates (by lower-
ing surface tension of the components) makes it
possible to obtain steel with the desired proper-
ties for annealing, tempering, etc.

64T70

BARANOV, S. M.

Baranov, S. M. - "The importance of surface phenomena in the development of the dendritic-liquefaction theory of flocculeformation in steel," Sbornik nauch. - tekhn. rabot (Vsesoyuz. nauch. inzh.-tekhn. o-vo metallurgov, Leningr. otd-niye), Issue 1. 1949, p. 192-98

SO: U-5240, 17, Dec. 53, (Letopis 'Zhurnal 'nykh Statey, No. 25, 1949).

BARANOV, S.M.

21769

BARANOV, S.M. Zavisimost' svoystv konstruktivnykh stali ot protessa
vyslezhki. V SB: Problemy konstruktivnykh stali. M.L., 1949,
S. 141-58. Bibliogr: 11 Nauch.

LC: Iste is Zhurnal'nykh stali, No. 1, 1949, 1949

PARSON, J.W.

21750

Parson, J.W.. O voprosakh razvitiya i vykora istok stali kon-
struktsionnoye naznacheniya. V KH: Inzhinernykh konstruktivnykh
Stali. M.I., 1949, S. 435-43.

CC: Inzhinernykh Stal' y, No. 9, 1949.

HA 234T50

USSR/Metallurgy - Steel, Properties Mar 52

"On the Surface-Active Component of Steel," S. M. Baranov

"Dok Ak Nauk SSSR" Vol 83, No 1, pp 125-128

Studies connection between essential properties of steel, such as hardenability, impact strength, temper brittleness, shape of carbide in pearlite structure of annealed steel, and presence of finely divided, high silicates, whose soly in liquid and solid steel varies with temp. Concludes that individual properties of steel heats may be explained

234T50

by the effect of surface phenomena taking place in crystn process. Submitted by Acad P. A. Re-binder 31 Dec 51.

BARANOV, S. M.

234T50

BARANOV, S. M.

Connection between the properties of steel and the method of its making. S. M. Baranov. *Litening Proizvodstvo* 1953, No. 7, 23-6. Greater hardness, hardenability, castability, surface tension, yield point, and tensile strength are characteristics of acid steel as compared with basic. The former has, besides a greater response to tempering, greater tendency towards temper brittleness and formation of quenching cracks. Acid steels usually exhibit definitely lamellar cementite in pearlitic areas, while in basic steels sharply defined ferritic areas are quite characteristic. The changes in properties are probably associated with the presence in acid steels of high-melting high-silica silicates approaching the composition of SiO_2 , which are somewhat soluble in the metal during thermal treatments. This solubility causes their precipitation at the grain boundaries having an austenite-stabilizing effect. Being surface-active, they are adsorbed on the faces of growing crystals of a new phase affecting their size and growth velocity as well as their tendency towards graphitization. The latter point was shown by comparing 4 acid and 3 basic heats with C 1.0-1.35, Si 0.8-1.3, and Mn 0.8%, the former precipitating much graphite on holding 30-40 min. at 650-720°, while basic steels did not show any traces of graphitization. H also appears to act as a surface-active agent and increases the tendency towards dendritic crystallization of the metals and causing them to have a Widmanstaedter structure on heating to high temperatures. With H-free metals show merely an increased grain size. J. D. Gat

02/12 Nov, 5/11

Effect of surface-active components on steel properties.
G. M. Buranov. *Trudy Leningrad. Vysch. Mekh. Inst.*
1954, No. 1, 124-41; *Referat. Zhur. Aka. 1956, Abstr.*
No. 6385; cf. C.A. 47, 9523i. — A theory is offered of the
relation between the presence in the steel of surface-active
compds. (colloidal by dispersed high-Si silicates (I); cf.
C.A. 44, 612g); the quantity and compn. and the properties
of the steel. The qty. of I in molten and solid steel de-
creases with decreasing temp., and is near zero in the α -
phase. Thus I seps. at the boundaries of austenite grains,
where it is colloidal dispersed. In all processes of second-
ary crystn. of steel, the colloidal dispersed I is adsorbed on
the faces of growing crystals of new phase, thus affecting
the dispersion, the form, and the velocity of growth. The
behavior of I during tempering, annealing, and hardening of
steel affects the form and size of sepg. carbides, the impact
strength, the quench cracking, the hardenability, and the
resistance to tempering. Melts are classified according to
the content of surface-active silicates, according to char-
acteristic properties. The presence of these silicates at the
grain boundary det. the susceptibility of the steel to temper
brittleness. The form of carbides and slag inclusions affects
the total lowering impact strength. A. N. Pestoff.

6
1-4F1
4E2C
1-5-11
4E3L

1/11 9/2/54

BARANOV, S. M.

USSR/Solid State Physics - Mechanical Properties of Crystals and Polycrystalline
Compounds, E-9

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 34859

Author: Baranov, S. M.

Institution: None

Title: On the Connection Between the Structure and Properties of Structural Steel

Original Periodical: Tr. nauch-tekhn. o-va chernoy metallurgii, 1955, 3, 291-299

Abstract: None

/ OF /

- 1 -

BARANOV, S.M., doktor tekhnicheskikh nauk, professor.

Temper brittleness in relation to metallurgical factors.

Metalloved. i obr. met. no.12:40-45 D '56.

(MLRA 10:2)

(Steel--Brittleness) (Steel--Metallurgy)

2

032 2/100, 0 121

NUCLEAR THEORY: INSTRUMENTATION (PULSE COUNTERS)

"Method of Absolute Count of Charged Particles," by S. M. Baranov and R. M. Polavoy. Pribory i Tekhnika Eksperimenta, No 3, May-June 1957, pp 32-36.

A method is proposed for calibrating standard setups with "and-window" counters, usually employed for the count of α -particles. A description is given of a α -counter of the through type, simple in construction and stable in operation. This counter makes possible absolute measurements of α and β particles and of fission fragments. The electronic circuit used in the operation of this counter is given. The experimentally-verified counting efficiency of the counter is 100 percent.

Card: 1/1

BARANOV, S.M., doktor tekhn.nauk prof.; LUKHINA, Ye.M., kand.tekhn.nauk

Characteristics of phase transformations in various heats of chromium-nickel steel. Izv.vys.ucheb.zav.; chern.met. 2 no.6:75-80 Je '59. (MIRA 13:1)

1. Leningradskiy mekhanicheskiy institut. Rekomendovano kafedroy tekhnologii metallov Leningradskogo voyenno-mekhanicheskogo instituta.

(Chromium-nickel steel--Metallography)
(Phase rule and equilibrium)

BARANOV (A)

FRASE I POSE KILGATATON SOV/PAII
Nauchno-tekhnicheskaya biblioteka mashinno-tekhnicheskoy promyshlennosti.
Kiyevske chislennyye izdaniya.

Metallovedeniye i tekhnicheskaya obrabotka (Technical Metallurgy and Heat
Treatment of Metals) Kiyev, Ukraina, 1961. 306 p. Metallovedeniye
inserted. 5,000 copies printed.

Sponsoring Agency: Gosizdatmashinno-tekhnicheskoy literatury
Sovetskoye Mashinno-tekhnicheskoye izdatel'stvo (Soviet
Technical Literature Publishing House). Kiyev, Ukraina. Chislennyye
razdelnyye izdaniya. Kiyevske chislennyye izdaniya.

Editorial Board: M. P. Ivanov, Doctor of Technical Sciences, I. Ya.
Dobryakov, Doctor of Technical Sciences, D. A. Dobryakov, Doctor of
Technical Sciences, I. S. Karpukhin, Doctor of Technical Sciences, A. A. Karpukhin,
Candidate of Technical Sciences, V. G. Ponomarev, Doctor of
Technical Sciences, and A. V. Chernov, Candidate of Technical
Sciences; Ed.: M. S. Sorokina, Tech. Ed.: M. S. Sorokina,
Sverdlovsk, Engineer.

Card 1/10

PURPOSE: This collection of articles is intended for scientific
workers and technical personnel of research institutions, plants,
and schools of higher technical education.

COVERAGE: The collection contains papers presented at a convention
held in Kiyev on problems of physical metallurgy and methods of
the heat treatment of metals applied in the machine industry.
Papers on problems of heat treatment of metals and alloys are discussed, and
results of investigations conducted to ascertain the effect of
heat treatment on the quality of metal are analyzed. The possibility of
improving the quality of metal with given mechanical properties
in disordered states is discussed. Problems of steel brittleness, the
effect of heat treatment on the properties of steel, the effect of
heat treatment on the properties of cast iron. Reheat treatments
are mentioned. Articles are accompanied by references, mostly
Soviet.

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Strucalin, A. I., Engineer, and L. A. Melnikov (Sverdlovsk). Transformation of Austenite into Martensite Under High Pressure	12
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Kocherzhinskiy, Yu. A., Candidate of Technical Sciences (Kiyev). Conditions of Formation of Pearlitic Austenite in Iron-Carbon Alloys	22
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18. III

27270

S/128/61/000/005/001/005
A054/A127

AUTHORS: Baranov, S.M., Golub, G.M. and Ivanova, Z.M.
TITLE: Effect of the melting conditions on the notch toughness of magnesium modified iron

PERIODICAL: Liteynoye proizvodstvo, no. 5, 1961, 4 - 6

TEXT: Because of low notch toughness it is not possible to use high-strength magnesium iron for structures subjected to high impact loads. The low notch toughness is caused by the magnesium which is a surface active substance changing the shape of the crystals and which is, moreover, not easily soluble in the medium in which it is active. Magnesium promotes the formation of non-disintegrating cementite and spheroidal graphite. Furthermore, it concentrates at the crystal border and lowers the toughness of the iron. In order to establish to what extent the melting process affects the properties and behavior of magnesium, three test series were carried out in which the effect of the crucible lining, chemical composition, amount of magnesium, thermal conditions of magnesium modification on the metal qualities were investigated. The test meltings took place in acid and basic crucibles. A 30-kg induction furnace was used in the first test series.

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Effect of the melting conditions ...

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the charge consisted of 67.3 kg (Si 3 kg) steel and graphite electrode scraps. 10-25% magnesium was added in the form of silicon-magnesium master alloy. For slag formation, crushed glass was used in the acid melting process and calcined lime + fluorite (in a 4:1 ratio) in the basic melting process. The master alloy was first decarburized by 0.05 - 0.1% aluminum. 20-25% Cr 75 (Si 75) ferrosilicium was added to the master alloy. In the first test series the silicon content varied between 1-3%, while the amount of magnesium was 0.057 - 0.34%. Modification was effected at a melt temperature of 1,400 - 1,550°C. The notch toughness of the metal, poured into wedge-shaped specimens and annealed at 900-950°C for 1-2 hours and at 700-730°C for 4-5 hours, was determined by the Mesnager process (with grooves in the samples). The optimum values were obtained for iron containing 3.0-3.2% C; 1.7-2.2% Si; 0.25-0.5% Mn, less than 0.04% S; 0.1% P, 0.2% Cr and 0.05% Mg. Any excess magnesium causes brittle fracture. The optimum modification temperature was 1,400 - 1,450°C. Iron poured in basic crucible showed better properties ($a_k = 2.35 \text{ kgm/sq cm}$; HB = 143 kg/sq mm) than that poured in acidic crucible ($a_k = 1.51 \text{ kgm/sq cm}$, HB = 149 kg/sq mm). The second test series was carried out in acid and basic crucibles of 150-kg industrial induction furnaces. The 120-kg charge consisted of killed steel (0.3% C; 0.56% Si; 0.40% Mn; 0.035% P; 0.042% S; 0.05% Cr), and electrode scraps, while for slag forming the same

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Effect of the melting conditions...

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agents were used as in the first tests. The iron was modified by a 50% magnesium nickel master alloy, at 1,440-1,460°C. The clover-shaped specimens were heat-treated at 950°C and 700-740°C. The best results were obtained with a magnesium content of 0.3 - 0.4%. Also in this case better results were obtained as to ductility and notch toughness in iron poured into basic crucible, as the result of a more thorough removal of slag-containing silicium oxide compounds. In acid crucibles deoxidation took place before adding ferrosilicium which did not affect the ductility but lowered the notch toughness. When using basic crucibles, previous deoxidation had not marked influence on these properties. In order to obtain spheroidal graphite in the structure, some excess magnesium had to be added. To deoxidize the residual amount of magnesium 1% soda, 2% soda + 0.15% ore and 0.3% ore were added. When melting without oxidation, the treatment of iron with soda, as a rule, increased the notch toughness by 1.5 - 2 times, whereas when oxidizing with a soda-ore mixture and then with ore alone, the notch toughness decreased. The third tests series was carried out in an acid cupola furnace (3t/h) with pig iron (no. 3 and 4). The iron was heated in the forehearth to 1,440-1,460°C and processed with oxygen. Calced soda (1% of the iron quantity) was added in the ladle and mixed thoroughly with the metal, thus scorifying the silicium and sulfur containing compounds. Then, without removing the slag, 3% sil-

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Effect of the melting conditions ...

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cium-magnesium master alloy with a 10-12% magnesium content was added in the shape of a disk fixed to a rod. After slag-removal, the iron was again treated with soda. The analysis of the wedge and clover-shaped specimens produced the following data: 2.8-3.5% C; 2.0-3.7% Si; 0.28-0.6% Mn; 0.06-0.14% P; 0.02-0.005% S; 0.05-0.2% Cr; 0.056-0.074% Mg. The samples were annealed at 900° and 730°C. The iron obtained had a higher notch toughness than the conventional, but compared with iron produced in the basic test furnaces its notch toughness was lower. This is partly caused by the higher P, S and Mn content of the initial metal and partly by the higher content of surface-active silicon oxides, hydrogen and magnesium in the metal base. The tests were carried out with the cooperation of S.Ya. Kolodnyy, Candidate of Technical Sciences. There are 3 figures, 3 tables and 4 Soviet-bloc references.

Card 4/4

L 11303-63

EWP(q)/EWT(m)/BDS AFFTC/ASD JD

ACCESSION NR: AP3000486

S/0129/63/000/005/0013/0017

54
53

AUTHOR: Baranov, S. M.; Lukhina, Ye. M.

TITLE: The mechanisms of phase, transformations in different melts of 40Kh steel

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 5, 1963, 13-17

TOPIC TAGS: surface ingredients in melts, silicon-monoxide (SiO), transformation of austenite, elimination of ferrite

ABSTRACT: Experiments with chromium steels showed that melts with the same chemical compositions, but different melting processes, have as a rule different structures after the same isothermic treatment. The active surface ingredients delay the separation of ferrite and also delay the process of transforming the austenite into ferrite-cement. The intensity of the influence of the surface active ingredients, of which silicon-monoxide is almost always present, can be estimated by the proportion of the amount of ingredients and the rate of displacement which usually takes place at temperatures of 450C-650C. By changing the oxidation process, it is possible to regulate the hardenability extent of steel.

The observed regularities in the changes of the properties of various melts of 40 Kh steel can be explained by the presence of silicon monoxide, the contents

Card 1/2

L 11303-63

ACCESSION NR: AP3000486

of which in the metal can be fixed from an analysis of the physico-chemical condition of the melting process. Orig. art. has: 4 figures, 3 tables.

ASSOCIATION: Leningradskiy Mekhanicheskiiy Institute (Lenigrad Institute of Mechanical Engineering)

SUBMITTED: 00

DATE ACQD: 03Jun63

ENCL: 00

SUB CODE: 00

NO REF SOV: 003

OTHER: 000

kes
Card 2/2

S/129/63/000/004/012/014
A004/A127

AUTHOR: Baranov, S.M.

TITLE: Method of producing high-strength steel of micro-nonhomogeneous structure

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov, no. 4, 1963, 50 - 52

TEXT: The author's investigations, resulting in the Author's Certificate No. 140071, class 18c, 1/30, proved that, if alloyed steel in the state of supercooled austenite is subjected to plastic deformation in the zone of intermediate transformation, the effect of carbon redistribution is increased. This leads to the production of a steel possessing a micro-nonhomogeneous structure of high elasticity and strength with a relatively low hardness. The author gives an account of a steel strengthening method not connected with a relatively high increase in hardness. The characteristic feature of this method, consisting of deformation in the zone of intermediate transformation combined with isothermal hardening, is the origination

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Method of producing high-strength...

S/129/63/000/004/012/014
A004/A127

of a specifically micro-homogeneous steel structure. There are 2 figures and 1 table.

ASSOCIATION: Leningradskiy mekhanicheskij institut (Leningrad Mechanical Institute)

Card 2/2

L 5289-66 EWT(m)/EWP(w)/T/EWP(t)/EWP(k)/EWP(b)/EWA(h)/EWA(c) JD/HW

AOC NR: AF5022049

SOURCE CODE: UR/0286/65/000/014/0125/0125

AUTHOR: Baranov, S. M.

ORG: none

TITLE: A method for strengthening alloyed construction steel. Class 18, No. 140071

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 14, 1965, 125

TOPIC TAGS: steel, alloy steel, metal heat treatment

ABSTRACT: This Author Certificate presents a method for strengthening alloy construction steel by quenching. To improve its elasticity and strength without increasing its hardness, tempering is done simultaneously with pressure working of steel at the temperature of supercooled austenite at, say, 450-750C. Following this, the steel products are cooled either in the air or in oil.

SUB CODE: IE, MM/ SUBM DATE: 03Apr58/ ORIG REF: 000/ OTH REF: 000

Card 1/1

L ONSI-M FET(a)/EWF(w)/I/EWP(t)/ETI/EGP(x) IJP(c) JD/HW

ACC NR: AP6032456

SOURCE CODE: UR/0129/66/000/009/0037/0038

AUTHOR: Baranov, S. M.; Shakhnazarov, Yu. V.

ORG: Leningrad Mechanical Institute (Leningradskiy mekhanicheskiy institut)

TITLE: Relative effectiveness of some methods of thermomechanical treatment of steels

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 9, 1966, 37-38

TOPIC TAGS: *onogenic metalworking,* ~~high temperature thermomechanical treatment, low temperature thermo-~~
~~mechanical treatment, combined thermomechanical treatment, metal working,~~
~~metal heat treatment, steel~~

ABSTRACT: The effectiveness of high temperature thermomechanical treatment (HTMT), low temperature thermomechanical treatment (LTMT), and combined thermomechanical treatment (CTMT) has been compared. Three low alloy structural steels, A(0.41% C, 1.02% Si, 0.40% Mn, 1.23% Cr, 1.63% Ni, 0.20% Mo, 0.07% V), B(0.40% C, 1.03% Si, 1.10% Mn, 0.22% Cr, 1.44% Ni, 0.19% Mo, 0.08% V) and C(0.31% C, 0.24% Si, 0.52% Mn, 1.30% Cr, 3.40% Ni, 0.8% W) were used in tests. All steel specimens were austenitized at 900 C and then either rolled at this temperature with 60—75% reduction and immediately oil quenched (HTMT); cooled to 550 C, rolled at this temperature with 60—65% reduction, and oil quenched (LTMT); or rolled at 900 C with 50—65% reduction, cooled to 550 C, rolled with 25% reduction, and quenched (CTMT). All the specimens were then tempered at 200, 350 and 550 C for 2 hours. The strengthening effect of

Cord 1/2

UDC: 621.789:669.14.29

L 02981-67

ACC NR: AP6032456

all three types of TMT was found to depend on chemical composition, primarily on carbon and chromium contents with tempering at 200C and on silicon content with tempering at 350 C. The effectiveness of TMT was evaluated on the basis of "specific strengthening", i.e., increase of yield strength per percent reduction. The specific strengthening produced by CTMT was considerably higher than that of HTMT and equal to or somewhat higher than that of LTMT. For instance, for steels tempered at 200C, the specific strengthening by HTMT, LTMT, and CTMT varied within 0.35—0.50, 0.48—0.63, and 0.47—0.76 kg/mm² to 1% reduction, respectively. The CTMT produces a higher notch toughness after tempering at 200 than LTMT: 5.1, 4.7, and 4.8 kgm/cm² with CTMT comparing to 4.5, 3.3, and 3.8 kgm/cm² with LTMT for A, B, and C steels respectively, while the values of elongation and reduction of area remain approximately the same. Orig. art. has: 1 figure and 4 tables.

SUB CODE: 11/ SUBM DATE: none/ OTH REF: 001/ ATD PRESS: 5099

Card

2/2 *eq/2*

USHENKO, N.K. [deceased]; BARANOV, S.M.; GORIZDRA, T.Ye.

N-substituted 2-aryloxazolidines. Ukr.khim.zhur. 19 no.6:
639-642 '53. (MLRA 8:5)

1. L'vovskiy meditsinskiy institut, Kafedra organicheskoy
khimii.
(Oxazolidine)

BARANOV, S.N., aspirant; MALINOVSKIY, M.S., professor.

Thermal disintegration of ethylene oxide and propylene oxide
in the presence of certain oxide catalysts. Dop.ta pov.L'viv.
un. no.3 pt.2:30-31 '52. (MLRA 9:11)

(Ethylene oxide) (Propylene oxide) (Catalysis)

USSR/Chemistry - Olefin Oxides

Nov 52

"Research on Olefin Oxides: VIII. Condensation of Styrene Oxide With Ammonia Over Aluminum Oxide," M. S. Malinovsky and S. N. Baranov, L'vov State U, Chair of Organ Chem

"Zhur Obshch Khim" Vol 22, No 11, pp 1970-1973

Because they felt that this particular field had been neglected, the authors set out to study the possibility of obtaining heterocyclic compounds from styrene oxide. The decomposition by heat of styrene

238T28

oxide at 500°, over aluminum oxide, was investigated. This decomposition gave off acetophenone, the principal product of the reaction, as well as aromatic hydrocarbons (styrene, ethyl benzene, toluene and benzene) and aromatic aldehydes (benzaldehyde and phenylacetic aldehyde). Under the same conditions as above, the decomposition by heat of styrene oxide in the presence of ammonia was investigated. In this case, N-containing heterocyclic compounds were formed. Among them, the presence of a pyridine, a methylphenylpyridine (of unknown structure) and derivs of pyrrole was proved.

238T28

Chemical Abst.
Vol. 48 No. 9
May 10, 1954
Organic Chemistry

7
② Chem
/ Ethylene oxide. V. Condensation of ethylene oxide
over magnesium oxide, zinc oxide, and their mixture with
aluminum oxide. M. S. Malinovsky and S. N. Baranov.
J. Appl. Chem. U.S.S.R. 25, 449-51 (1952) (Engl. transla-
tion).—See C.A. 47, 2694a. H. L. H.

BARANOV, S. N.

U S S R .

The thermal decomposition of ethylene oxide. M. S. Malinetskii and S. N. Baranov (State Univ. Lvov). *Sbornik Statei po Obshchei Khimii Akad. Nauk S.S.S.R.* 2, 1974-9(1953).—Decompn. of ethylene oxide (I) over MgO at 400° and a vol. rate (ratio of gas vol. per hr. to vol. of catalyst) of 60-5 produces chiefly AcH and a condensate of its ethylene glycol acetal (II) together with some CO, CO₂, O, H, CH₄, CH₃O, CH₃:CH, MeCH:CH, (III), and EtCH:CH₃. The presence of III shows some free radical formation occurs. Over MgO·Al₂O₃, the liq. condensate contains 55% H₂O and 17% olefins, aromatic, and satd. hydrocarbons with less AcH and II. Increasing the vol. rate to 140-5 increases yield of AcH and II and also produces crotonaldehyde, dioxane, and EtOH. The splitting of I probably produces mostly —CH₂CH₂O— radicals, which further can produce CH₃ radicals. H. M. L.

BARANOV, S.M.

USSR.

V. N-Substituted 2-aryloxazolidines. N. K. Uschenko, S. N. Baranov, and T. E. Goridra (Med. Inst., Lvov). *Ukrain. Khim. Zh.* 19, 538-42 (1953) (in Russian). -- N-Substituted 2-aryloxazolidines (I) are prepd. from equimolar amts. of ethanediolamines and aromatic aldehydes (or cyclohexanone) refluxed 1-2 hrs. in C_6H_6 with a Dean and Stark trap. I contg. the Ph group are cryst. compds.; 1, Me-substituted at N atom, are colorless, thin oils distg. *in vacuo* without decompn. I substituted at N atom and in position 2 is resistant to the action of HCN. C_6H_6 (300 ml.), 55 g. BrH, and 37.5 g. $MeNHCH_2CH_2OH$ are refluxed 1 hr., 9.3 g. H_2O removed, the C_6H_6 evapd., and the residue distd. *in vacuo* to give 81% 2-phenyl-3-methyloxazolidine, b. 242°. The following I were prepd. similarly (substituents and % yield given): 2-o- ClC_6H_4 , 3-Me, 60, b. 98-103°; 2-m- $O_2NC_6H_4$, 3-Me, 62, b. 121-3°; 2,5-di-Ph, 3,4-di-Me, 83, m. 72°; 2-o- ClC_6H_4 , 3,4-di-Me, 5-Ph, 59, m. 124°; 2,2-pentamethylene, 3,4-di-Me, 5-Ph, 85, m. 50°; 2,3-di-Ph, 91, m. 85.5°; 2-o- ClC_6H_4 , 3-Ph, 81, m. 58°; 2-m- $O_2NC_6H_4$, 3-Ph, 87, m. 84°; 2-(3,4- $CH_2O_2C_6H_4$), 3-Ph, 87, m. 82°. Cf. L. Knorr and H. Matthes, *Ser.* 34, 3484 (1891). Elisabeth Barabach

MALINOVSKIY, M.S.; BARANOV, S.N.

Thermal degradation of propylene oxide and its condensation with ammonia over aluminum oxide. Ukr.khim.zhur. 20 no.1:57-63 '54.
(MLRA 7:3)

1. L'vovskiy gosudarstvennyy universitet im. I.Franko, kafedra organicheskoy khimii, L'vovskiy meditsinskiy institut.
(Propylene oxide) (Condensation products (Chemistry))

USHENKO, N.K.; BARANOV, S.N.; GORIZDRA, T.Ye.

Reaction of oxazolidines with α -mercaptocarboxylic acids. Ukr.
khim.zhur. 20 no.1:64-70 '54. (MIRA 7:3)

1. L'vovskiy gosudarstvennyy meditsinskiy institut, kafedra organi-
cheskoy khimii. (Oxazolidine) (Thioacids)

55 AR A NOV, S. N.

Preparation of fural- and arylpyruvic acids by hydrolysis of
5-arylidene-2-thioxazolid-4-ones. 71. E. Garinza and S.
N. Garinza (Mec. Inst. 1, vol. 2, 1958). *Zhur. Obshchei Khim.* 26,
114-4 one in 400 ml. 10% Ba(OH), 20 min., cooling, and acid-
ifying with HCl gave 83% phenylpyruvic acid, m. 154-7°.
Refluxing 5.85 g. 2-thio-4-oxazolidone (I) with 7 g. o-Cl-
C₆H₄CHO, 5 g. dry NaOAc, and 25 ml. AcOH 1 hr. and dilg-
with H₂O gave 73% 5-o-chlorobenzylidene-2-thioxazolid-4-one,
m. 170-1° (from aq. EtOH), which refluxed 0.5 hr. with
10% NaOH gave 68% o-chlorophenylpyruvic acid, m. 150-1°.
Refluxing 10 g. 5-cinnamylidene-2-thioxazolid-4-one with
250 ml. 20% NaOH 3-4 min., cooling, and acidifying gave
75% styrylpyruvic acid, m. 187-96° (which decomp.).
Refluxing 11.7 g. I with 15.1 g. m-ONC₆H₄CHO, 10 g.
AcONa, and 50 ml. AcOH 1.5 hrs. gave 77% 5-m-nitro-
benzylidene-2-thioxazolid-4-one, m. 213° (from aq. AcOH),
which (10 g.) refluxed briefly with 250 ml. 5% NaOH gave
on acidification 68% m-nitrophenylpyruvic acid, m. 189°
(from aq. AcOH). Refluxing 7.5 g. 5-salicylidene-2-thio-
oxazolid-4-one with 150 ml. 10% Ba(OH)₂ and acidifying
on cooling gave 78.5% lactone of o-hydroxyphenylpyruvic
acid, m. 151° (from H₂O). Similarly 11.7 g. I, 9.6 g. fur-
fural, 10 g. NaOAc, and 50 ml. AcOH refluxed 1 hr. gave
70% 5-furfurylidene-2-thioxazolid-4-one, m. 231°, which
ground with 10% NaOH and kept 2 hrs. at room temp. gave
35.5% furfurylpyruvic acid, m. 129-30° (from MePh). Re-
fluxing 5-p-dimethylaminobenzylidene-2-thioxazolid-4-one
with 5% NaOH 5 min. gave 35% p-dimethylaminophenyl-
pyruvic acid, m. above 285° (from aq. EtOH). Refluxing
11.7 g. I with 15.2 g. vanillin, 10 g. NaOAc, and 50 ml.
AcOH 1 hr. gave 5-vanillylidene-2-thioxazolid-4-one, 65%
m. 237-8°, which briefly heated with 20% NaOH gave 4-
hydroxy-3-methoxyphenylpyruvic acid, m. 159-60° (from
H₂O).
G. M. Kozlov

RM HT

BABINOV, S.N.; VIEGERT, R.V.

Effect of the characteristics of alcohol components on the rate of
alkali hydrolysis of complex ethers. Part 2: Hydrolysis of phenol
ethers and benzyl alcohols. Zhur. ob. khim. 27 no.4:909-913 Ap '57.
(MLRA 10:9)

L'vovskiy meditsinskiy institut i L'vovskiy politekhnicheskii
institut.

(Benzyl alcohol) (Ethers) (Hydrolysis)

BARANOV, S.N.

BARANOV, S.N.; TARNAVSKAYA, N.Ye.

Synthesis of pteridines from 4,5-diaminopyrimidines and α - thioketo acids. Ukr. khim. zhur. 23 no.5:646-650 '57. (MLRA 10:11)

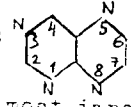
1. L'vovskiy meditsinskiy institut, kafedra organicheskoy khimii.
(Pteridine) (Pyrimidine) (Acids, Organic)

BARANOV, S.N.: TARNAVSKAYA, N.Ye.

Synthesis of pteridines from 4,5-diaminopyrimidines and α -thioketo-acids. Ukr. khim. zhur. 24 no.4:472-476 '58. (MIRA 11:10)

1. L'vovskiy meditsinskiy institut, kafedra organicheskoy khimii.
(Pteridine) (Pyrimidine) (Acids, Organic)

AUTHOR: Baranov, S.N. (1'vor)
 TITLE: Chemistry of Pteridins (Khimiya pteridinov)
 PERIODICAL: Uspekhi khimii, 1958, Vol 27, Nr 11, pp 1337-1353 (USSR)

ABSTRACT: A summary of their properties, the synthesis and the connections between their chemical structure and their biological activity are given.
 Pteridins have the following basic structure:  They can

be synthesized by two methods: The first and most important method was suggested already by Sachs and Meierheim (Ref 8) and elaborated by Traube (Ref 18): the pyrazine cycle or the hydropyrazine cycle which is easily oxidizable is completed in the pyrimidine derivatives. There are also some pyrazines in which the pyrimidine cycle is completed. According to the first method pteridin is principally obtained from 4,5-diaminopyrimidine with carbonyl compounds, e.g. dialdehydes, diketones etc. In the case of several pteridins also two isomers are formed the formation of which depends on the acid content of the medium in which they are formed (Table). Karrer (Ref 76) condensed diaminopyrimidine with monosaccharides and

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Chemistry of Pteridins

SOV/74-27-11-4/5

obtained methyl pterin with the intermediate product pteridin. In the second method by Dick and Wood (Ref 99) 2-chloro-3-carbomethoxypyrazine is condensed with guanidine salts and by a treatment with urea or thiourea pteridin is obtained in a yield of 51 - 59 %. Beresovskiy is mentioned who describes the synthesis of compound pteridins. Pteridins are light yellow powdery substances of high melting temperature, they are difficultly soluble in organic solvents, water and acids, easily soluble in lyes. In dependence of the pH-value isoxanthopterin may form tri-, di-, mono-ions or have neutral character. Tschesche and Schäfer (Ref 98) carried out sulfurizations and obtained sulfoxanthopterin which is insensitive to acid and basic hydrolysis. Fluorescence which is a characteristic feature of all pteridins may be considerably reduced by the introduction of sulfur. Pteridin owes its biological importance to its connection with certain vitamins: "pteroil"glutamic acid, "pteroic"acid. They are derivatives of xanthopterin found already early in urea and which in case of various affections shows quantitative changes. It was equally assumed that pteroil glutamic acid stops the growing of tumours. However, it was demonstrated that only the lacking of the

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Chemistry of Pteridins

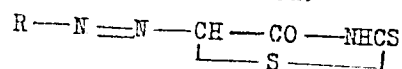
SOV/74-27-11-4/5

pholic acid or the presence of its antagonists obstruct their growth. Antagonists are substances of a character similar to that of the pholic acid. The modifications are various other substituents in certain positions and various rearrangements in individual positions. There are 1 table and 109 references, 10 of which are Soviet.

Card 3/5

AUTHORS: Grishchuk, A. P.; Baranov, S. K. 79-28-4-10/60
 TITLE: Synthesis and Conversions of Some Thiazolidine Derivatives
 (Sintez i prevrashcheniya nekotorykh proizvodnykh tiazoli-
 dina)
 PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 4,
 pp. 896-901 (USSR)

ABSTRACT: Studying the reaction of rhodanine with some compounds
 the authors considered the possibility of a compound of
 rhodanine with such active materials as diazone. Syntheses
 carried out in this direction led to a number of new com-
 pounds. Thus, the formerly unknown azorhodanines were being
 the general formula below was obtained:



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in which R = aryl (table). The obtained materials may not
 only be of theoretical but also of practical importance,
 perhaps they may serve as new azo dyes. Moreover, the for-

Synthesis and Conversions of Some Thiazolidine
Derivatives

79-28-4-10/60

mation of new physiologically active preparations may be expected if valuable therapeutic amines are used for the mentioned syntheses. Rhodanine showing acid properties as azo component may be compared with phenols. For this reason the reaction should be carried out in the alkali agent. However, since rhodanine is very unstable in the solution of caustic alkali and rapidly and totally hydrolyzes in the cold, the authors used a weak 3 - 3.5% ammonia solution. Under these conditions, at low temperatures and high reaction velocity rhodanine hardly hydrolyzed and the predominant part of the formed product formed the precipitation. Analytic determinations and the reduction of the preparations which lead to the formation of the initial amines and the destructive products confirmed the assumption that the obtained materials are azo compounds. The following proves that the obtained preparations belong to the 5-substituted ones of rhodanine: a) All synthesized azorhodanines are easily soluble in alkali and show intensive coloring, i. e. they have acidity. On the other hand the n-substituted rhodanines are neutral and insoluble in alkali solution; b) An alkali hydrolysis of the azorhodanines leads to the formation of thiocyanic acid and the correspon-

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Synthesis and Conversions of Some Thiazolidine Derivatives 79-26-4-10/60

ding α -substituted thioketo acids; c) 5-substituted preparations of rhodanine e. g. 5-isopropylidene rhodanine cannot bind with diazo salts; d) Azorhodanines do not react with aldehydes. Azorhodanine solutions strongly change their color on the transition from the acidous to the alkaline medium in the small pH interval, i. e. they react like indicators. Azorhodanines are very sensitive reagents to silver-, copper-, and mercury salts. Together with them they form precipitations of characteristic colors. 8 new materials were obtained and described. There are 1 table and 16 references, 9 of which are Soviet.

ASSOCIATION: L'vovskiy meditsinskiy institut (L'vov Medical Institute)

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79 29-5-35/69

AUTHORS: Baranov, S. N., Zhoglo, F. A., Vignart, R. V.
TITLE: ~~Synthesis of Some Esters of the 4,4'-Dioxydiphenylsulfone~~
and of Carboxylic Acids (Sintez nekotorykh slozhnykh efirov
4,4'-diksidsifenilsul'fona i karbonsykh kislot)
PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 5,
pp. 1274-1276 (USSR)
ABSTRACT: The authors aimed at synthesizing the full esters of the
4,4'-dioxydiphenylsulfone and of some carboxylic acids of
the aliphatic, aromatic and heterocyclic series. In refer-
ences there are remarks concerning the synthesis of the
esters of 4,4'-dioxydiphenylsulfone by its condensation with
acids in the presence of phosphoroxychloride (Reference 3).
The same method was used here. The products necessary for
the synthesis were taken "ready made" or according to the me-
thods described in references. The purity was checked accord-
ing to chemical constants and in some cases also ana-
lytically. For the synthesis of the esters the dry dioxyd-
iphenylsulfone was carefully crushed with the acid (1 part

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